Alberta Woodland Caribou Recovery Plan 2004/05 - 2013/14

Alberta Species at Risk Recovery Plan No. 4

Alberta

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2004/05 – 2013/14

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NOTE from the MINISTER of SUSTAINABLE RESOURCE DEVELOPMENT: The Alberta Government has adopted this plan as Alberta's Woodland Caribou Recovery Plan with the exception of the recommendation in Section 7.2 relating to a moratorium on further mineral and timber allocations on specific caribou ranges.

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PREFACE

Albertans are fortunate to share their province with a diverse variety of wild species. Populations of most species of plants and animals are healthy and secure. However, a small number of species are either naturally rare or are now imperilled because of human activities. Recovery plans establish a basis for cooperation among government, industry, conservation groups, landowners and other stakeholders to ensure these species and populations are restored or maintained for future generations.

Alberta's commitment to the *Accord for the Protection of Species at Risk* and to the *National Framework for the Conservation of Species at Risk*, combined with requirements established under Alberta's *Wildlife Act* and the federal *Species at Risk Act*, has resulted in the development of a provincial recovery program. The overall goal of the recovery program is to restore species identified as *Threatened* or *Endangered* to viable, naturally self-sustaining populations within Alberta.

Alberta species at risk recovery plans are prepared under the supervision of the Fish and Wildlife Division, Alberta Sustainable Resource Development. These recovery plans are prepared by recovery teams composed of a variety of stakeholders including conservation organizations, industry, landowners, resource users, universities, government agencies and others. Membership is by invitation from the Director of Wildlife Management, and includes representation from the diversity of interests unique to each species and circumstance. Other interested parties and individuals have an opportunity to comment on these recovery plans. Conservation and management of *Threatened* or *Endangered* species continues during preparation of the recovery plan.

Recovery plans are a comprehensive compilation of goals, objectives, strategies and actions, both short- and long-term, required to maintain or restore the *Threatened* or *Endangered* species. These plans are provided by the recovery team as advice to the Minister responsible for fish and wildlife management (the Minister) and to all Albertans. Alberta's Endangered Species Conservation Committee reviews completed recovery plans, and provides recommendations to the Minister. Plans accepted and approved for implementation by the Minister are published as part of the recovery plan report series. Approved plans are a summary of the Department's commitment to work with involved stakeholders to coordinate and implement conservation actions necessary to restore or maintain these species.

Recovery plans are "living" documents and are revised as conditions change or circumstances warrant. Each approved plan describes how an annual review and performance evaluation will be conducted. Implementation of each recovery plan is subject to the availability of resources, from within and from outside government.

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EXECUTIVE SUMMARY

Woodland caribou (*Rangifer tarandus*) is listed as *Threatened* under Alberta's *Wildlife Act*. This status reflects continuing declines in caribou population size and distribution, small population size, the dependency of woodland caribou on older forest, and the sensitivity of this species to human activities. Key factors directly or indirectly affecting woodland caribou population size and distribution include habitat change as a result of wildfire or human land use activities, predation, hunting, poaching, and vehicle collisions.

The southern mountain and boreal populations of woodland caribou have been listed as *Threatened* within Canada. This federal designation covers all woodland caribou that occur in Alberta. The Alberta Woodland Caribou Recovery Plan has been prepared to meet provincial requirements for recovery planning as described in Alberta's *Wildlife Act*, as well as requirements set out under both the national *Accord for the Protection of Species at Risk* and the federal *Species At Risk Act* (SARA).

While recovery of woodland caribou in Alberta is feasible from a biological and technical standpoint, commitment, collaboration and action by government and involved stakeholders are paramount to successfully recovering this species.

This recovery plan identifies effective and feasible strategies and actions necessary to achieve woodland caribou recovery and removal from the list of provincially threatened species. The recovery plan goals are linked to the rationale for listing the species in Alberta, and focus on: 1) achieving self-sustaining woodland caribou herds; 2) maintaining the distribution of caribou in Alberta; and 3) ensuring habitat requirements are met for woodland caribou over the long-term throughout caribou ranges in the province.

The specific detail of required recovery actions will vary between caribou ranges, and in some cases, by location within individual ranges. A system of Caribou Range Planning is outlined as an appropriate vehicle to fine-tune necessary recovery actions and guide the implementation of these actions in individual caribou ranges. All caribou herds have been categorized by current (2003) population status to establish urgency and determine appropriate recovery actions. Caribou range plans will be developed by Range Teams, which will be directed and guided by the Alberta Woodland Caribou Recovery Plan.

This recovery plan outlines a ten-year time line, to progressively improve conditions for caribou in Alberta. During this period, the overall caribou recovery targets are to achieve a stable population status for the majority of caribou herds in the province, and ensure that sufficient quality habitat has been provided, or is developing, for individual caribou herds. Monitoring and evaluating progress toward achievement of the recovery plan goals will occur at the range level, and be rolled up to provide a provincial level report and evaluation. This provincial evaluation will provide a basis for describing Alberta's fulfillment of national requirements with respect to woodland caribou recovery.

1.0 INTRODUCTION

The Alberta woodland caribou recovery planning process was initiated in September 2001 in response to the reaffirmation of the legal designation of woodland caribou as *Threatened* [1] in Alberta under the provincial *Wildlife Act*. This status was recommended by the Alberta Endangered Species Conservation Committee (Fish and Wildlife Division 2004, also see Dzus 2001) and was based on the following factors:

- Continuing population and distribution declines.
- Small current woodland caribou population size.
- Dependency of woodland caribou on older forest.
- Sensitivity of woodland caribou to human activities.

At the direction of the Minister of Sustainable Resource Development, the Alberta Woodland Caribou Recovery Team was officially formed during the fall of 2002.

In addition to the provincial designation of woodland caribou, in May 2002 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2002, 2003) listed the southern mountain and boreal populations of woodland caribou as *Threatened* nationally within Canada. The federal designation covers all the woodland caribou found in Alberta: both southern mountain and boreal woodland caribou occur within the province. The Alberta provincial recovery process has been designed to meet provincial requirements for recovery planning as described in Alberta's *Wildlife Act*, as well as national requirements set out under both the *Accord for the Protection of Species at Risk* and the federal *Species At Risk Act* (SARA).

This woodland caribou recovery plan is the result of extensive deliberation by the recovery team. Many team members volunteered their time for this important endeavour. **The team was composed of individuals who were advisors in the development of this recovery plan. These individuals represented the following sectors, although they were not necessarily official spokespersons for their sectors:**

- Provincial government
  - Fish and Wildlife Division, Alberta Sustainable Resource Development
  - Public Lands and Forests Division, Alberta Sustainable Resource Development
  - Alberta Energy
- Federal government
  - Parks Canada
- Environmental interest groups
  - Federation of Alberta Naturalists
- Boreal Caribou Committee

[1] The Scientific Subcommittee of the Alberta Endangered Species Conservation Committee noted that woodland caribou in Alberta might be near to qualifying for *Endangered* status.

- Oil and gas industry (for Canadian Association of Petroleum Producers)
  - Devon Resources Canada Inc.
  - Talisman Energy Inc.
- Forest industry
  - Weyerhaeuser Company Ltd. (for Alberta Forest Products Association)
  - Alberta-Pacific Forest Industries Inc.
- University based research
  - University of Alberta

First Nations (through the office of Treaty 8 First Nations of Alberta) were invited to participate in this woodland caribou recovery team.

In this plan the recovery team provides recommended goals, objectives, strategies and actions to guide woodland caribou recovery within Alberta. The recovery team will also monitor implementation of the plan.

2.0 SPECIES BIOLOGY

2.1 Adaptations, Ecotypes and Breeding Biology

Woodland caribou are medium-sized ungulates with brown bodies and a cream-coloured neck, mane, tail and rump areas. Both males and females typically have antlers. Woodland caribou are adapted to withstand harsh winter conditions, with a well-insulated coat and small extremities (tail and ears). They also have large, crescent-shaped hooves and long legs, for travelling over muskeg and through snow.

Two ecotypes of woodland caribou occur in Alberta (Figure 1). These ecotypes differ with regard to seasonal movement patterns and habitat use. *Mountain caribou* inhabit alpine areas in the Rocky Mountains in summer and migrate to mature and old forest in the foothills for the winter, although in recent years some mountain caribou herds have failed to migrate to traditional winter range in the foothills and have remained in the mountains year-round. *Boreal caribou* do not undergo seasonal migrations; they remain within forest and peat habitats throughout the year.

Woodland caribou are polygamous and breed in October. Calves are born in early May (boreal caribou in northern Alberta) or early June (mountain caribou in west central Alberta). Caribou have a low reproductive potential, as they only have one calf per year, and females do not typically produce young until three years of age. In Alberta, caribou mortality rates are variable, but typically high for calves during their first months of life (Alberta Fish and Wildlife Division and Boreal Caribou Committee unpubl. data). For herds studied to date, annual adult survival ranges from 74% to 100% (Fuller and Keith 1981, Edmonds 1988, Stuart-Smith et al. 1997, Dzus 2001, McLoughlin et al. 2003).

2.2 Distribution and Population Trends

The distribution of woodland caribou in Alberta has always been discontinuous, with caribou herds[2] historically occurring in areas of suitable habitat throughout northern and west central portions of the province. This historic distribution of woodland caribou has, however, been substantially reduced during the past century, both in northern Alberta and along the eastern slopes of the Rocky Mountains. Declining woodland caribou distribution has continued in recent years, to the point where caribou are no longer present in many areas where they were formerly found. Figure 1 shows the current general distribution, herd/range names, and approximate range boundaries of woodland caribou in Alberta. Aerial surveys, caribou radio telemetry studies, habitat mapping, and other techniques provide the basis for Figure 1.

It is difficult to census caribou herds using standard aerial survey methods; therefore, accurate estimates of woodland caribou population size are not currently available for Alberta. However, reliable estimates of woodland caribou population trends are available. Calculations based on adult survival and calf recruitment data provide accurate information on caribou population trends (i.e., whether caribou herds are declining, stable, or increasing). These data (Table 1) have recently been collected from ten caribou herds in Alberta (Dzus 2001, McLoughlin et al. 2003, Alberta Fish and Wildlife Division unpubl. data). Population trend data demonstrate that most of the monitored woodland caribou herds in Alberta are currently declining (Table 2), with some herds declining at very high rates. The estimated cumulative percent change in population size for monitored woodland caribou herds is provided in Appendix 1.

[2] A caribou "herd" refers to the animals that are habitually found within a given area, defined here as a caribou range. In Alberta, individual caribou within a given herd generally have no, or infrequent, interaction with caribou in other herds.

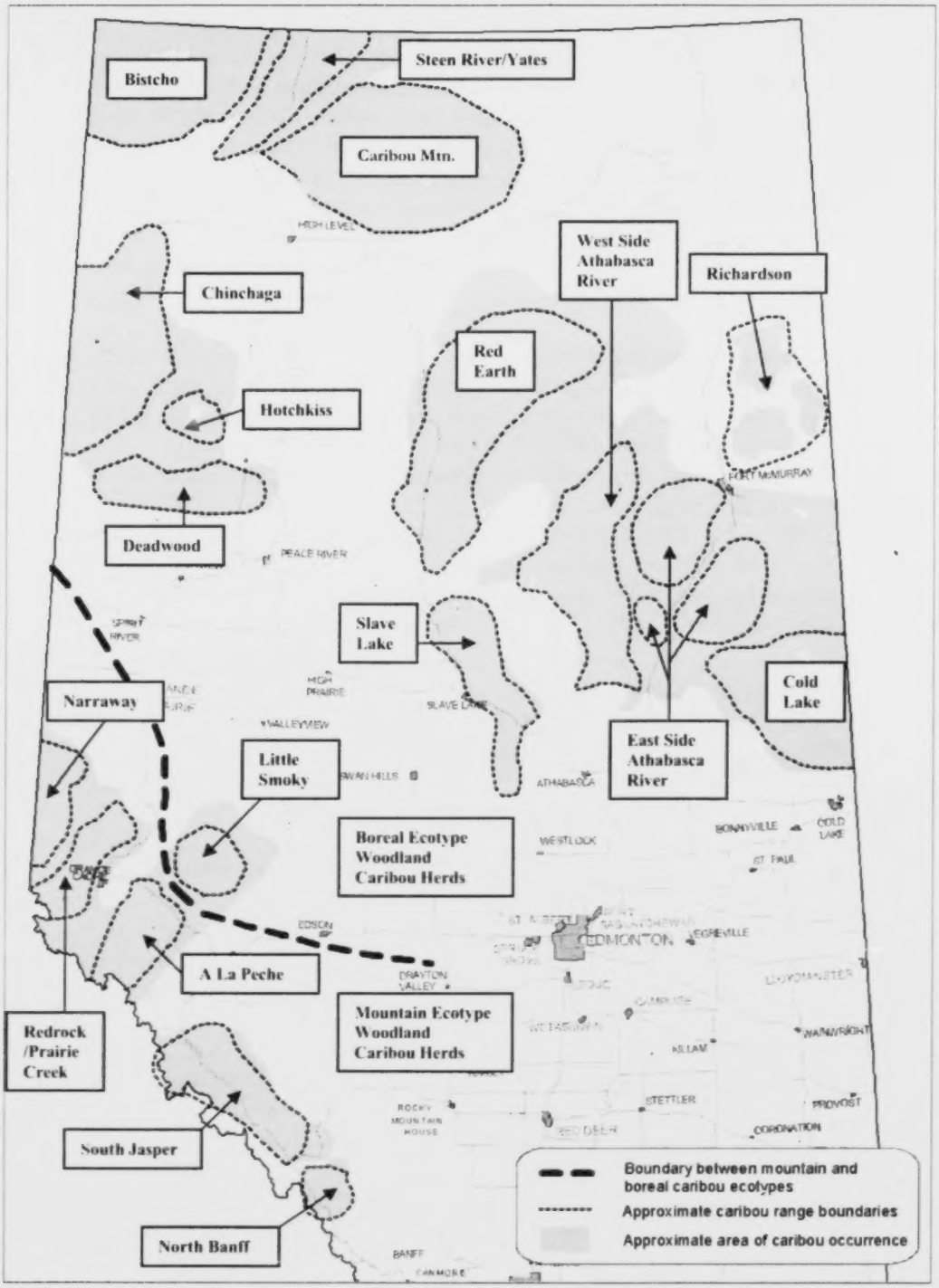

Figure 1. Woodland Caribou Herd Names and Approximate Range Boundaries.

Table 1. Population Trend of Woodland Caribou Herds in Alberta.

Herd	Average Rate of Population Change (λ)[3]	95 % Confidence Interval	Number of Years Monitored For Population Trend
North Banff	See below[4]	---	Not monitored
Slave Lake[5]	Not yet available	---	1 (2002-2003)
Little Smoky	0.883	0.818 – 0.933	5 (1998-2003)
South Jasper	See below[6]	---	Not monitored
Caribou Mountains	0.932	0.853 – 1.018	8 (1995-2003)
Red Earth	0.964	0.879 – 1.080	8 (1995-2003)
Cold Lake[7]	0.984	0.950 – 1.033	4 (1998-2002)
East Side Athabasca River[8]	0.968	0.925 – 1.008	9 (1993-2003)
Chinchaga[9]	0.891	Not available	1 (2002-2003)
Steen River/Yates	---	---	Not monitored
Bistcho	---	---	Not monitored
Hotchkiss	---	---	Not monitored
Deadwood	---	---	Not monitored
Richardson	---	---	Not monitored
Narraway	---	---	Not monitored
Red Rock/Prairie Creek	1.030	0.884 – 1.068	6 (1997-2003)
West Side Athabasca River	0.991	0.937 – 1.045	10 (1993-2003)
A La Peche	1.070	1.033 – 1.118	5 (1998-2003)

[3] Finite rate of population growth (λ) values of 1.000 indicate population stability, values less than 1.000 indicate population decline, and values greater than 1.000 indicate population growth. For each caribou herd λ was estimated from annual recruitment and mortality of female caribou and summarized for each study period as the geometric mean of annual estimates. Average rate of population change and confidence intervals were calculated using methods described in McLoughlin et al. (2003).

[4] Reconnaissance aerial surveys conducted in 2001, 2002 and 2003 indicate that very few woodland caribou remain within the North Banff range (Parks Canada unpubl. data).

[5] Data not yet tabulated.

[6] The South Jasper herd has declined by an estimated 39% to 47% between 1988 and 2003, based on a mark/re-sight survey procedure (Parks Canada unpubl. data).

[7] Includes caribou data from both Alberta and Saskatchewan portions of the Cold Lake Air Weapons Range.

[8] Missing population data from 1998.

[9] Only one year of population trend data, so resamples (bootstrapping) unavailable to generate confidence intervals.

Table 2. Population Status of Woodland Caribou Herds in Alberta.

Herd	Status
North Banff	Immediate Risk of Extirpation
Slave Lake	Immediate Risk of Extirpation [10]
Little Smoky	Immediate Risk of Extirpation
South Jasper	In Decline
Caribou Mountains	In Decline
Red Earth	In Decline
Cold Lake	In Decline
East Side Athabasca River (ESAR)	In Decline
Chinchaga	In Decline
Steen River/Yates	Unknown
Bistcho	Unknown
Hotchkiss	Unknown
Deadwood	Unknown
Richardson	Unknown
Narraway	Unknown
Red Rock/Prairie Creek	Stable [11]
West Side Athabasca River (WSAR)	Stable
A La Peche	Stable [12]

2.3 Habitat Requirements

Terrestrial and arboreal lichens are the primary winter food for woodland caribou in Alberta (Edmonds and Bloomfield 1984, Thomas et al. 1996). Lichens are slow growing and are most abundant in older habitats (Kranrod 1996). As a result, caribou are generally associated with late seral stage habitats. Forested peat complexes are the primary habitat for boreal caribou, while mature and old conifer forests are the primary habitat for wintering mountain caribou (Edmonds

[10] Based on known reduction in herd distribution, total count aerial surveys results, known and suspected human-caused mortality, heavy industrialization of the range, and recent habitat loss to forest fires (Alberta Fish and Wildlife Division unpubl. data).

[11] Reconnaissance survey and other information (Alberta Fish and Wildlife Division unpubl. data) suggests the Redrock/Prairie Creek caribou herd suffered a substantial population decline in the 1970's and 1980's, coinciding with early roadway development in the range. Also, although they still migrate to forested foothills, over the last decade this herd has essentially abandoned much of the Prairie Creek portion of the winter range and the north and northeast portions of the Redrock area (Alberta Fish and Wildlife Division and West Central Caribou Committee unpubl. data.)

[12] Over the last decade the majority of the A La Peche caribou herd has largely abandoned most of the traditional forested winter range (east of Highway 40) and now largely winters in alpine and sub alpine areas (Alberta Fish and Wildlife Division and West Central Caribou Committee unpubl. data).

and Bloomfield 1984, Bradshaw et al. 1995, Stuart-Smith et al. 1997, Szkorupa 2002, Szkorupa and Schmiegelow 2004, Szkorupa et al. 2004).

Caribou require large, contiguous tracts of their preferred habitat so that they can maintain low population densities across their range. In part, this behaviour is a critically important anti-predator tactic, as predators typically hunt in areas with high prey density or predictability. Caribou also avoid predation by using different habitats than other ungulates, since predators are drawn to areas where other ungulate species are abundant (Bergerud et al. 1983, Bergerud and Page 1987, Edmonds and Smith 1991, James and Stuart-Smith 2000, Rettie and Messier 2000).

3.0 LIMITING FACTORS [13]

Factors directly or indirectly affecting the size and distribution of woodland caribou herds include **habitat change** (loss, fragmentation or alteration) as a result of natural processes (e.g., forest fires, forest succession) or human land use activities (e.g., timber harvesting, oil and gas exploration and development, peat mining, use of access routes for recreation or trapping), **predation, hunting, poaching, and vehicle collisions** (Edmonds 1988, Dzus 2001). Weather, climate, disease and parasites can affect caribou survival in some cases, although these factors are not believed to significantly affect woodland caribou in Alberta at this time.

Natural and human disturbances can directly change habitat, rendering it unsuitable for use by caribou. For example, human activities such as timber harvesting, oil and gas exploration and development, agricultural expansion, and peat mining remove vegetation cover and lichens important for caribou habitat. Forest fires can similarly affect caribou habitat quality. Habitat altered in these ways can potentially recover in time, although complete regeneration of caribou habitat generally requires many decades, or longer. Reuse of industrial infrastructure (e.g., locating new geophysical exploration projects on existing lines, all-terrain vehicle travel on existing lines for recreation, trapping, industrial projects) can slow or eliminate habitat regeneration. In some cases activities such as agricultural expansion and facility development result in permanent loss of caribou habitat.

Human land use activities can also indirectly make habitat less suitable for caribou. Recent studies indicate that caribou reduce their use of otherwise suitable habitat because of its proximity to either human infrastructure or habitat disturbances. In northern Alberta, research has shown that caribou reduce their use of suitable habitat in proximity to seismic lines, roads and well sites (Dyer et al. 2001). Because of this avoidance factor, in northern Alberta roads act as partial barriers to caribou movement, potentially restricting caribou use of range areas (Dyer et al. 2002). In west-central Alberta, reduced use of habitat near roads and cut blocks has also been suggested by Oberg 2001, Stepaniuk 1997, and Smith et al. 2000.

Although caribou have co-existed with predators for millennia in Alberta, recent human activities and forest fires (both human and naturally caused) have increased the vulnerability of

[13] A detailed review of limiting factors is beyond the scope of this recovery plan, but can be found in Alberta's woodland caribou status document (Dzus 2001) and other references cited in this section.

caribou to predation. Changes in forest composition and the development of access routes are thought to be primary causes. For example, both timber harvesting and fire increase the amount and distribution of young forest stands and of various plant species, which in many cases attract and sustain increased numbers of moose, elk and/or deer. These changes lead to increases in the number of predators, especially wolves, and a subsequent increase in predation threat to caribou (e.g., Seip 1992). In addition, habitat loss and alteration (including barriers to caribou movement and reduced use of areas by caribou) may concentrate caribou in restricted portions of their range (Dyer et al. 2001, 2002). Since maintaining low population densities is one of the ways that caribou avoid predation, this concentration of animals may lead to greater caribou mortality. Finally, research has demonstrated that linear access corridors facilitate wolf travel and hunting behaviour within caribou range (James 1999, James and Stuart-Smith 2001). Continued industrial and/or non-industrial use of corridors may further facilitate wolf-hunting efficiency by compacting snow during winter. On Alberta's caribou ranges where intensive studies have occurred, wolf predation has been demonstrated to be the most common cause of adult woodland caribou mortality (Edmonds 1988, McLoughlin et al. 2003).

In addition to facilitating predation, linear access corridors, particularly roads, increase the exposure of caribou to legal (First Nations) and illegal hunting, to vehicle collisions, and to increased disturbance as a result of human activity.

Weather and climatic conditions may also affect caribou populations. Some caribou specialists have suggested that deep snow accumulation reduces wolf hunting effectiveness and thereby enhances caribou survival, and that mild winters may be detrimental to predator avoidance by caribou. Alternatively, it is possible that severe winter and snow conditions (especially snow crusting) may lead to greater caribou mortality and reduced calf production/survival. Significant spring snow pack may hinder adult female mountain caribou migration to remote calving areas possibly resulting in lower calf recruitment (Edmonds and Smith 1991). It is possible that climate change could affect forest fires (frequency and severity), permafrost, snow conditions, forage (amount and distribution) and predator-prey systems. The future effects of these changes on caribou numbers and distribution are largely unknown, but probable scenarios suggest negative effects are likely.

4.0 RECOVERY POTENTIAL AND RATIONALE

There is good potential for recovery of woodland caribou in Alberta since:

1. Caribou herds continue to exist within range areas that are geographically dispersed across parts of the historic distribution of woodland caribou within the province;

2. Many limiting factors are related, either directly or indirectly, to human activities and developments, which means that there are opportunities to manage and reduce the effects of these human-caused limiting factors;

3. A considerable body of research has lead to sound knowledge of the factors affecting caribou and of management options available to improve the status of the species; and

4. The two government/industry multi-stakeholder caribou committees (i.e., Boreal Caribou Committee and West Central Alberta Caribou Standing Committee), together with others, have completed background work that will help to achieve caribou recovery.

4.1 Ecological and Technical Feasibility

The ecological feasibility of recovery will differ among caribou ranges across Alberta. Ranges that are affected by high levels of human activity will require more intensive management. Similarly, urgent, intensive, and effective management of limiting factors will be required in order to avoid extirpation of those caribou herds that are in steep population decline, or are believed to have a small population size.

Reports from the Boreal Caribou Committee (2001), the West Central Alberta Caribou Standing Committee (1996), and Alberta Energy (2003) provide some options for mitigation and planning approaches to guide industrial activities on caribou ranges in Alberta. These reports have recommended industrial practices that attempt to minimize the effects of new industrial activities. Also, techniques are being developed to help initiate restoration of existing industrial footprints (Alberta Caribou Range Restoration Project 2004). In some caribou ranges, the multi-stakeholder committees oversee research and monitoring, habitat supply planning, range planning, and development of industrial guidelines. These recent reports, techniques in development, and committees enhance the technical feasibility of recovery.

4.2 Socio-Economic Considerations

Woodland caribou have become a focal species for those promoting boreal forest conservation in Alberta and across the country, and the species has played a role in the culture of many First Nations in Canada. Many Albertans and special interest groups have indicated the high value they place on woodland caribou through their correspondence with the provincial government. For many sectors of the public, woodland caribou and its habitat possess a very high social value.

Conversely, a high economic value has been placed on natural resources that occur on caribou ranges. Natural resource extraction activities, in particular oil and gas exploration and production, and timber harvesting, are common across most of the woodland caribou's range in Alberta. These industries represent one of the most valuable economic sectors in the province. This recovery plan recognizes that caribou recovery will only be achieved through the commitment of all stakeholders, and that there will likely be some economic costs to maintaining woodland caribou across the boreal landscape. Decisions on any trade-offs between possible economic costs and woodland caribou management options will ultimately rest with government.

Detailed caribou range and/or provincial level analyses of the socio-economic implications of woodland caribou recovery in Alberta will require data input from completed caribou range plans (see Section 7.3).

4.3 Potential Conflicts and Challenges

Woodland caribou have historically been distributed across a large land area in northern and west central Alberta. Some of these lands, now dramatically altered by human activity, are no longer occupied by caribou herds and do not have nearby extant herds. It is unlikely that caribou could successfully be re-established and maintained in these significantly altered former range areas[14].

Government priorities, industrial land use, and public activities will be important factors as caribou management approaches are implemented. For example, commercial and non-commercial users, together with government, need to accept that further access limitations, or alternate development techniques, that are more expensive, less convenient, more complicated, and/or have a higher risk, may be required. Various other potential recovery actions may also be controversial. In addition, financial and other resources will be required from provincial and federal governments and others.

5.0 VISION AND PRINCIPLES

The following statements describe the overall vision for this recovery plan and the guiding principles that are necessary for success.

5.1 Vision

The Alberta Woodland Caribou Recovery Team envisions that, within 10 years, a majority of woodland caribou herds in Alberta will exhibit positive population trends and exist in well-distributed populations across Alberta's caribou ranges, setting the stage for the species recovery and removal from the list of provincially threatened species.

5.2 Guiding Principles

Commitment to caribou recovery
This recovery plan is based on the assumption that all land users on caribou range, including all affected branches of government, share responsibility for and are committed to the goal of caribou recovery. Commitment and action by all of these parties will be critical to achieve caribou recovery.

Ecosystem management
Strategies must recognize ecological inter-relationships and the inherent complexity in managing ecosystems. A holistic approach is needed. The cumulative effects of all factors influencing caribou survival must be considered and addressed.

[14] The recovery team does, however, believe that options exist for caribou to reoccupy currently vacant portions of ranges that still contain resident caribou herds.

Err on the side of caution
All who are involved in caribou recovery should err on the side of caution, since unknown factors and unexpected interaction among factors could affect the success of this recovery plan.

Uncertainty should not delay action
Lack of information or scientific certainty should not impede implementation of actions believed to be necessary to achieve the goals of this recovery plan.

Long-term sustainability
Long-term sustainability of recovery actions is essential. In some cases, however, short-term actions may be introduced to produce urgent short-term results. These practices must be revisited and revised to more sustainable practices when the intended short-term adjustment is achieved.

Adaptive management
Because nature is a dynamic force, and because human knowledge and technologies can change over time, it is important that adaptive management is practiced in supporting caribou recovery in Alberta. The success of this recovery plan must be re-evaluated, at least every three years, and the management approaches adjusted as required to ensure that the best measures for long-term sustainability of caribou herds are being implemented.

Economic realism
This plan recognizes that humans will continue to engage in activities on caribou ranges that contribute to economic well-being. The plan will therefore strive to identify effective and feasible recovery strategies.

6.0 RECOVERY GOALS AND OBJECTIVES

Goals
The recovery plan goals are linked to the factors (see Introduction) that have led to the *Threatened* designation for woodland caribou in Alberta (Fish and Wildlife Division 2004). The following goals direct the strategies and actions listed later in this recovery plan:

1. **Achieve self-sustaining woodland caribou herds and maintain the distribution of caribou in Alberta.**
2. **Ensure the long-term habitat requirements for woodland caribou are met within Alberta's caribou ranges.**

Short-term Objectives
The following short-term objectives provide measurable targets for action and evaluation over the first three years of plan implementation. The objectives are organized under the two goals (stated above):

1. **Achieve self-sustaining woodland caribou herds and maintain the distribution of caribou in Alberta**
   - Stabilize woodland caribou populations and affect a population increase (achieve positive population growth) for herds currently at risk of extirpation.
   - Achieve stable or positive population growth for herds currently known or believed to be in decline.
   - Maintain population stability or achieve positive population growth in currently stable woodland caribou herds.
   - Avoid loss of existing woodland caribou herds.[15]
   - Determine woodland caribou population trends for herds where population information is lacking.
   - Determine the feasibility of restoring self-sustaining woodland caribou herds to former range areas.[16]

2. **Ensure long-term habitat requirements for woodland caribou are met within Alberta's caribou ranges**
   - Ensure sufficient quality habitat[17] (including type, amount, and distribution) is available at all times to sustain each woodland caribou herd and thereby allow range occupation.

7.0 RECOVERY STRATEGIES

The following sections describe strategies necessary to achieve the goals and objectives described above. These strategies provide background information and context for the recovery actions listed later in this document.

The specific detail of required recovery actions will vary somewhat by caribou range, and in some cases, by location within individual ranges. Therefore, the recovery team has determined that range level evaluations and action plans (i.e., Caribou Range Plans) must be completed as soon as possible. Range plans will guide the implementation of recovery actions for individual caribou ranges. Monitoring and evaluating progress toward achievement of the recovery plan objectives would occur at the range level. Documented progress from all range level evaluations would then be rolled-up to provide a provincial level evaluation and report.

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[15] The recovery team does not intend to require infeasible efforts, at any cost, to preserve every herd. However, reasonable efforts must be made to avoid loss of individual herds. The loss of any herd, or significant portion thereof, will make it increasingly difficult to improve the provincial status of woodland caribou.

[16] The recovery team intends this review to consider a full range of restoration techniques and options, including restoration of caribou to unoccupied historic range areas and restoration to unoccupied portions of ranges that still contain caribou herds. The recovery team is unaware, however, of any successful North American examples of woodland caribou reintroduction to unoccupied historic range.

[17] In this plan "habitat quality" refers to all of the factors that alter the value of habitat to caribou. This includes the inherent value of landforms, vegetation types, and seral stages, as well as the direct and indirect habitat implications of features such as roads, geophysical exploration lines, and other human infrastructure known to affect caribou.

Categorizing the current population status of individual caribou herds is the first step in this process.

7.1 Categorization of Caribou Herd Population Status

Each caribou herd has been categorized (Table 2), based on current (2003) population trends, to establish urgency and appropriate recovery actions. The herds are listed in order of urgency — the most urgent and most significant actions will be required where herds are in decline and especially where they are facing immediate risk of extirpation.

7.2 Matching Strategic Direction to Caribou Herd Population Status

The following sections outline the actions required to support the sustainability of individual caribou herds.

Caribou Herds in **Immediate Risk of Extirpation**
These herds require immediate and significant actions in order to avoid herd loss, and allow continued occupation of the caribou range.

- Industrial and other human activities on the caribou range must be addressed. An assessment of current and potential habitat constraints and concerns (habitat supply evaluation) must be immediately completed, and recommended corrective actions initiated. The habitat supply evaluation must consider habitat constraints and concerns resulting from both human and natural causes.
- A moratorium on further mineral and timber resource allocation (sales) should be put in place until a range plan is completed, evaluated, and implemented. It is anticipated that this process will take a maximum of one year from the date of range team formation.
- To avoid herd extirpation, predator management and possibly management of other prey species will be required to improve caribou herd trend and affect a caribou population increase.
- Measures must be taken to eliminate any hunting and poaching of caribou.
- Herds must be monitored annually to ensure that herd trends and distribution are known with high confidence.

Caribou Herds **In Decline**
These herds require urgent action to arrest caribou herd declines and to diminish the risk of herd extirpation. This will help alleviate the need for severe future management actions.

- Industrial and other human activities on the caribou range must be addressed. An assessment of current and potential habitat constraints and concerns (habitat supply evaluation) must be immediately completed, and recommended corrective actions initiated. The habitat supply evaluation must consider habitat constraints and concerns resulting from both human and natural causes.
- Predator management and/or management of other prey species may be required to achieve stable or positive caribou population growth.
- Measures must be taken to eliminate any hunting and poaching of caribou.
- Herd trends and distribution must be monitored sufficiently to permit an evaluation of recovery actions.

Caribou Herds of **Unknown** Status

These herds require monitoring to establish trends that can become the basis for categorization and action. In some cases, however, professional judgement and local knowledge may indicate that individual herds are likely in decline or are in immediate risk of extirpation. Several caribou herds of unknown population status do occur within ranges containing high levels of industrial and other human infrastructure and developments, and/or high levels of habitat loss caused by recent forest fires (Appendix 2). In such cases, the herd status should be categorized and recommended recovery actions should begin immediately. For all herds of unknown status, habitat evaluation, planning, and management actions should be initiated or continued. Trend monitoring is a high priority, but lack of this information should not become a reason to delay actions that are likely necessary to sustain the herd.

Stable Caribou Herds

These herds are not experiencing a recent decline in population, although past declines may have occurred. However, preventative actions to sustain these herds will still be necessary. In general, activities that are listed above for herds in decline should be initiated at a reasonable rate for stable herds. Predator and/or management of other prey species will not be implemented. Specific guidelines for project and landscape level industrial and human activities must be implemented, including caribou habitat supply evaluation and planning. Herds must be monitored sufficiently to assess if herd stability is being maintained, and to permit an evaluation of management actions.

7.3 Caribou Range Plans

While this recovery plan provides direction for the recovery of woodland caribou in Alberta, it must be augmented by local plans that are tailored to the conditions of the range and the population trend of the herd in question. The exact nature of specific recovery actions, such as those concerning detailed caribou habitat supply evaluations, can only be assessed and determined at the range level. Caribou Range Teams should therefore prepare Caribou Range Plans, through an open and honest process. Range teams will be directed and guided by the Alberta Woodland Caribou Recovery Plan to develop recommended actions and solutions for successful implementation at the range specific level.

Range teams are equivalent to the federally defined Recovery Implementation Groups (National Recovery Working Group 2004). It is noted that the Boreal Caribou Committee has already initiated two range teams in northern Alberta (East Side of Athabasca River and Chinchaga range teams).

Range teams should be based on designated geographic areas within Alberta (Figure 2). Each range team would be responsible for planning and recommending recovery actions on one or more caribou ranges. Grouping several ranges under the jurisdiction of individual range teams will be necessary because of the limited availability of knowledgeable individuals available to participate as team members. This grouping of ranges will, however, be efficient since caribou conservation issues, and potential management actions, are often very similar for adjacent

caribou herds. Range teams may choose to create working groups, which focus in detail on specific topics or herd areas. Appendix 3 provides a Terms of Reference for caribou range teams, and describes the relationship between range teams (including range plans) and the Alberta Woodland Caribou Recovery Team. It is expected that throughout their planning process, range teams will consult in an ongoing manner with the Alberta Woodland Caribou Recovery Team, through the Recovery Team Leader.

Range teams will receive direction from, and be bound to, the goals, objectives and strategies outlined within the Alberta Woodland Caribou Recovery Plan. Anticipated range team activities and responsibilities are listed in Appendix 4. Range plans are expected to be completed promptly and should be succinct, providing clear direction about recommended actions and solutions.

On provincial lands, range teams will be formed at the request of the Director of Wildlife Management (Alberta Fish and Wildlife Division), in consultation with Directors from other affected provincial government land and resource management departments. It is also very important that range teams be formed in consultation with a multi-stakeholder caribou committee[18]. The Boreal Caribou Committee has already achieved substantial progress on caribou range planning; continued involvement of a multi-stakeholder caribou committee will be essential to successful range plan preparation and implementation.

Range teams that affect both provincial and federally controlled lands will be formed at the request of both the Director of Wildlife and appropriate senior federal government personnel from Parks Canada, Environment Canada, and/or the Department of National Defence. Range teams will include the individuals responsible for wildlife and land-use management in the area, and in addition include other individuals to approximate the organizations and sectors invited to participate on the Alberta Woodland Caribou Recovery Team. Range teams are to be technical in nature. It is recognized that the multi-stakeholder committees have considerable expertise with regard to managing industrial activity on caribou range. These committees have been the primary vehicle for generation of financial and other resources to support caribou research, population monitoring, planning, and other essential activities. A recommended new provincial multi-stakeholder committee (based on the current Boreal Caribou Committee structure) would be expected to provide core membership to range teams.

Caribou range plans will be provided to senior provincial and federal government (where federal lands are involved) personnel for review, approval, and implementation. Since it is envisioned that a provincial multi-stakeholder caribou committee will provide significant membership to the range teams, there will be effective and ongoing communication between the range team and the multi-stakeholder committee throughout the development of the range plan. Range plans will also be communicated to the Alberta Woodland Caribou Recovery Team, and will be formally provided to the Alberta Endangered Species Conservation Committee by the Director of Wildlife. Figure 3 and Figure 4 outline a proposed review and approval process for completed

[18] The Alberta Woodland Caribou Recovery Team strongly recommends that a single government/industry multi-stakeholder caribou committee be formed in Alberta, based on the functional model of the Boreal Caribou Committee.

range plans for provincial lands and lands within National Parks respectively. A review and approval process for range plans affecting the Cold Lake Air Weapons Range (Dept. National Defence) has not been determined.

The Alberta Woodland Caribou Recovery Team envisions that range plans will provide input to, and be implemented using existing government and company planning and approval systems. In some cases it may be determined that new and innovative systems are required. For example, a comprehensive geographic information management system (GIS) for tracking land-use within caribou ranges is required to more effectively implement many of the recommendations outlined in this recovery plan. Appendix 5 provides examples of some current provincial government[19] and company planning and approval systems through which range plan recommendations can be implemented.

Describing and planning certain recovery activities, such as predator and management of other prey species, will be the responsibility of government, although these activities would by necessity be reviewed by the range teams and integrated into their evaluations and recommendations. These government recovery activities would also follow the review and approval process shown in Figures 3 and 4.

Since several caribou herds in Alberta occupy ranges that cross the provincial boundary, it will be important to communicate range plan recommendation and results to wildlife and land managers in adjacent jurisdictions (British Columbia, Northwest Territories, Saskatchewan). To the extent possible, caribou and land management on these caribou ranges should be aligned in the respective jurisdictions to ensure the effectiveness of recovery actions.

It should be noted that some members of the Alberta Woodland Caribou Recovery Team voiced strong concerns that range teams and range planning could result in undue delays in the delivery of necessary recovery actions for woodland caribou. The Alberta Woodland Caribou Recovery Team expects that range plan review, approval and implementation would proceed in a timely manner. Range plans must be completed and recovery actions must be implemented promptly if caribou recovery is to be achieved in Alberta. Delivery of some recovery actions (e.g., caribou herd monitoring) will occur concurrently with range plan development.

[19] Appendix 5 lists current planning and approval systems managed by Alberta Sustainable Resource Development. Systems managed by other government boards and ministries are not listed.

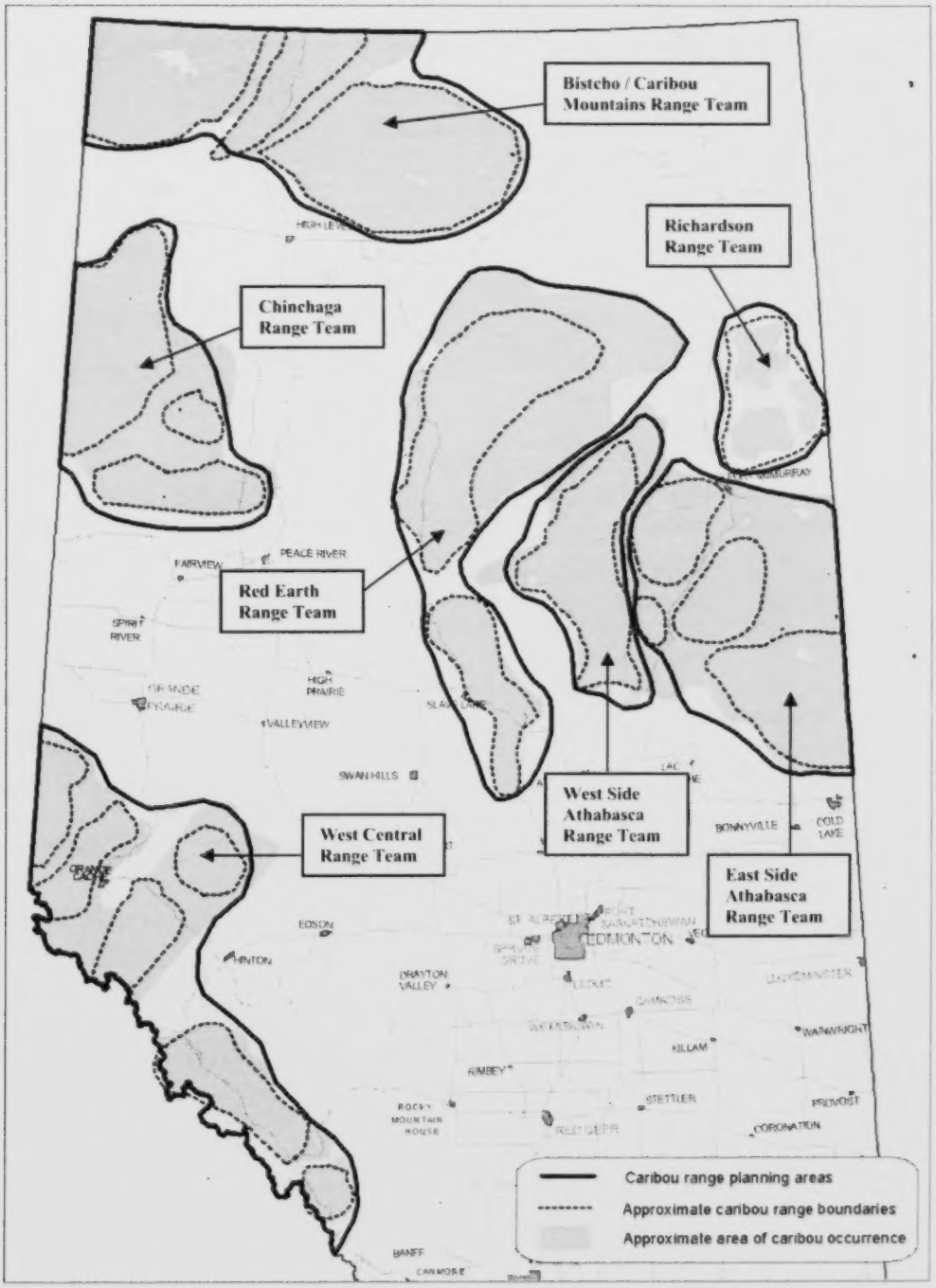

Figure 2. Proposed Geographic Organization of Woodland Caribou Range Teams.

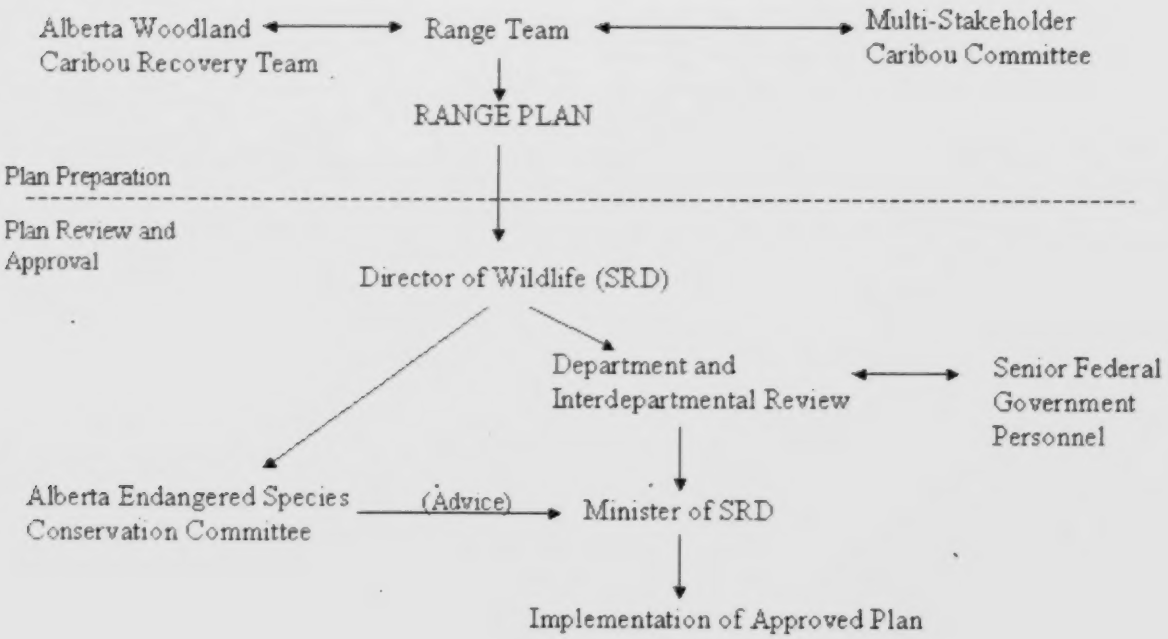

Figure 3. Review and Approval Process for Caribou Range Plans on Provincial Lands.

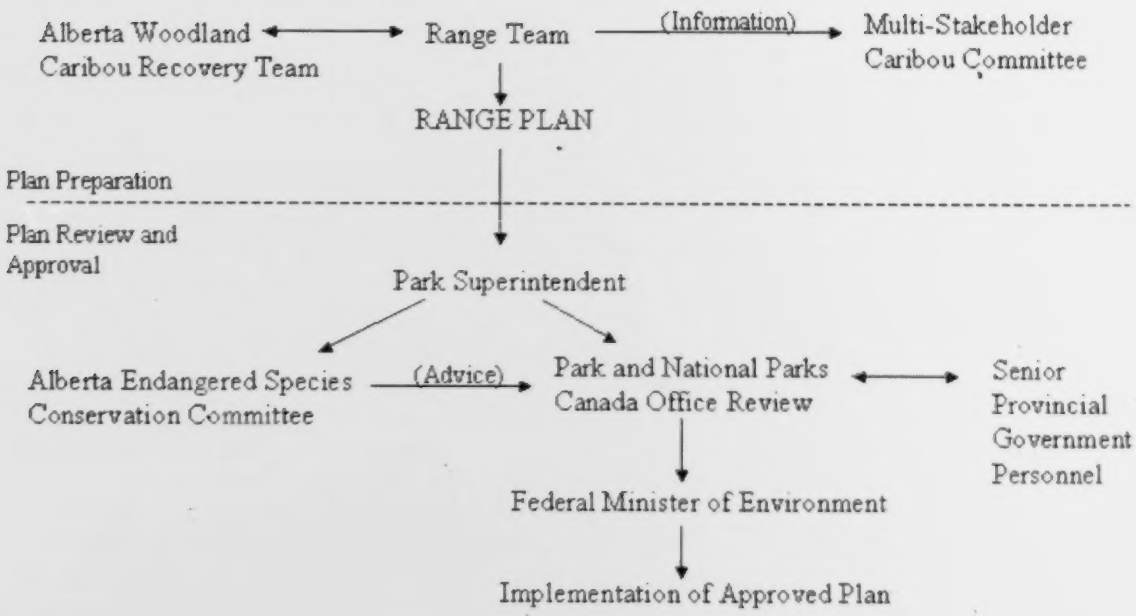

Figure 4. Review and Approval Process for Caribou Range Plans within National Parks.

7.4 Habitat Planning Targets

In many cases current land management on Alberta's caribou ranges is focused on the application of project level industrial guidelines and mitigation. Guidelines and the implementation of associated best practices remains an essential management tool. Since they attempt to minimize the negative implications of individual developments, current guidelines provide some management of cumulative effects. However, this approach does not adequately allow for landscape level evaluation and management of direct and indirect cumulative effects that may influence caribou populations and habitats. Caribou range planning recommendations must be based upon clearly defined targets for caribou habitat supply. An absence of habitat targets will result in unfocused planning activities, may not allow for a sufficient supply of caribou habitat to be identified or provided (through management of human activities and wildfire), and may not adequately permit assessment and management of negative cumulative effects. An absence of targets may also result in the imposition of unnecessary restrictions on resource development activities. Habitat targets are necessary if the Alberta Woodland Caribou Recovery Plan is to recommend "measurable targets for action and evaluation" (see Section 6.0).

Development of caribou habitat targets has already begun in Alberta. Based on a substantial body of research, the Boreal Caribou Committee (2003) has documented the following relationship between caribou population trend and functional habitat loss resulting from the occurrence of human caused infrastructure (e.g., roads, trails, pipelines, geophysical exploration trails, cutblocks) and young fire-origin forest stands:

$$Y = -0.258a - 0.212b + 1.140 \ (R^2 = 0.8682, P<0.05)$$

Where Y = finite rate of caribou population increase (λ), a = percentage area of anthropogenic footprint (buffered on all sides by 250 m) within caribou range, and b = percentage area of caribou range burned by recent (50 years or less) wildfire [20] [21].

This relationship can be used to evaluate current amounts, or recommend projected future amounts, of natural and anthropogenic habitat change, in relation to goals for rate of caribou population increase (λ). These evaluations or recommendations can then be used in an iterative planning process within caribou range plans. The equation is currently being used as the basis of the Chinchaga and the East Side of Athabasca River caribou range planning activities being conducted by the Boreal Caribou Committee.

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[20] This 2-predictor multiple regression model was developed using caribou population trend data from six boreal caribou herds, together with data on current levels of habitat alteration. It is possible that the ultimate effects of current levels of habitat alteration have not yet been reflected in caribou population trend data. Therefore, the maximum allowable levels of habitat change predicted by this model should be viewed or applied with caution.

[21] Application of this model takes into account forest succession and assumed recovery of anthropogenic footprint in modelling future caribou habitat values. The current Chinchaga and East Side Athabasca range team are investigating several scenarios of habitat recovery (unpublished).

In west central Alberta, the development of a habitat-planning target for mountain caribou winter range is incomplete, although some work has occurred (West Central Alberta Caribou Standing Committee 2002).

The effort to establish and formulize caribou habitat planning targets must be completed, and allowed to form a fundamental basis of caribou range planning recommendations. Caribou habitat planning targets should supply recommended direction on the type, amount, and spatial arrangement of habitat (i.e., landscape composition) required within caribou ranges in order to sustain caribou herds. Caribou habitat planning targets should be used to describe the minimum (see footnote #18) habitat that is necessary for the survival and recovery of woodland caribou within Alberta.

7.5 Industrial Operating and Access Management Guidelines

7.5.1 Operating Guidelines

Project level management of industrial activities on provincially managed caribou ranges has largely been conducted through use of operating guidelines (West Central Caribou Committee 1996, Boreal Caribou Committee 2001, Alberta Energy 2003). It is noted, however, that the application of operating guidelines has not been consistent across the province. Although they consider many elements, current guidelines focus on minimizing the size, amount, tenure, and extent of individual industrial developments. All guidelines advocate use of temporary access routes where practical, to reduce highway vehicle intrusion onto caribou range.

Operating guidelines serve two purposes. First, in an effort to provide some level of mitigation in relation to individual projects, guidelines provide direction to industry and regulators. Guidelines are an attempt to reduce the negative effects of development on caribou herds and habitats at a project level. Although they also represent an attempt to minimize the cumulative effects of infrastructure development, guidelines have essentially been used in lieu of broader landscape level management. Second, guidelines provide a base case from which range planning can evaluate current and projected future effects of industrial projects on caribou habitat and range condition. It is anticipated that operating guidelines may evolve as caribou range plans assess habitat constraints and recommend range-specific management changes.

Until the range planning process is completed, it is important that well conceived operating guidelines are applied broadly across all caribou ranges in a clear and equitable manner. Various questions have been raised (primarily from industry) as to the consistency with which operating guidelines are being applied across provincial caribou ranges. Presently, it is unclear what (if any) guidelines are being applied to some individual caribou ranges. It is noted that some caribou ranges (e.g., most of the Cold Lake Range, particularly within the Cold Lake Air Weapons Range) are not currently subject to industrial operating guidelines developed for caribou conservation. A summary and evaluation of the application of operating guidelines on caribou ranges is currently required. Also, an assessment of the efficacy of current guidelines, with respect to caribou conservation, is required.

7.5.2 Access Management

All current operating guidelines were developed in consideration of the need for access management on caribou range. Most of the current guidelines discuss and make recommendations regarding public access control. By reducing the size, amount, tenure, and extent of individual industrial access routes, operating guidelines functionally manage potential recreational and other access. All current operating guidelines have resulted from a consensus that non-industrial access is most effectively limited by non-standard access construction and maintenance techniques[22]. However, range teams must review current levels of recreational, trapping, and other access (and the hazards they may pose to caribou herds) and determine if additional action or measures are required. Any such additional actions or measures should be listed with range plan recommendations. It is noted that, with some possible exceptions, current recreational and other use and travel in many caribou ranges are much less than current industrial use and travel; however, recreational and other use and travel can affect caribou habitat through mechanisms such as slowing forest regeneration on linear features and through initiation of wildfire.

The Alberta government's proposed Access Management Program (see Appendix 5) may align effectively with strategies outlined in this recovery plan. Details of the Access Management Program were not available to the recovery team for review at the time of submission of this recovery plan. To be effective an access management program must deal with the development (type, amount and distribution), use (industrial and public) and reclamation (when appropriate) of all forms of linear features (e.g., roads, seismic lines, pipelines, etc.).

7.6 Management of Other Wildlife Species

7.6.1 Predator Management

In some cases, management of other wildlife species will be required to arrest caribou population declines and prevent extirpation of individual caribou herds. Human induced habitat changes have upset the balance between woodland caribou and their predators, particularly wolves. Woodland caribou herds will not be sustainable in the long-term unless habitat conditions on caribou ranges are improved and/or maintained in a way that protects caribou from excessive[23] predation. The Alberta Fish and Wildlife Division previously identified criteria for using wolf management to assist restoration of endangered, threatened or rare ungulate populations (Alberta Fish and Wildlife Division 1991).

Ultimately, habitat conservation and management is the fundamental tool to reduce undue predation on caribou. However, in some cases, current levels of predation may result in the extirpation of certain caribou herds prior to landscape recovery, compromising the possibility of woodland caribou recovery in Alberta.

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[22] These techniques include routes designed for frozen ground use, no and low-grade routes, use of matting, variable construction standards along the length of a access route, seasonal closures, removal of watercourse crossings, etc.
[23] Predation levels which on average result in sustained negative population growth for a caribou herd.

Predator management measures can be categorized into two groups: (1) measures which strive to affect predator mobility and hunting efficiency, and (2) measures which strive to control predator population size and distribution, using either lethal or non-lethal means. Some of the industrial operating guidelines currently identified in Alberta are, at least in part, designed to affect predator mobility and hunting efficiency. The text provided below addresses predator control measures.

Predator control on (or near) caribou range should only be implemented under the following strict conditions:

- Demonstrated need for predator control to support herd recovery.
- Predator control must be predicated on land management and habitat restoration procedures (appropriate for caribou recovery) being in place, or under development. **Effective predator control is difficult and expensive to maintain in the long term and there is strong social reluctance to rely on this tool. Predator control will not succeed as a sole, or predominant, tool for caribou recovery.**
- Predator control must be viewed as an interim (although potentially periodic) intervention only, for arresting dramatic caribou population declines, thereby preventing extirpation of caribou herds.
- Predator control would be conducted to achieve specific, stated, and measurable results.
- Predators would not be eliminated from the landscape.

7.6.2 Management of Other Prey Species

Predator control on caribou range will have other ecosystem implications, besides providing a period of reduced caribou mortality. Other wild ungulate species (moose, elk, deer) populations will grow rapidly (more rapid growth and to greater population size than caribou) if predator populations are reduced. Population increases of these species will compound the complexity of providing interim mortality protection for caribou (e.g., high prey populations will continue to draw wolves from adjacent areas, and will contribute to rapid and high levels of wolf population recovery following the end of management activities). Lessard et al. (2004) have modeled several scenarios of wolf and/or moose direct population control with respect to woodland caribou population density. These authors note that in situations where wolf population growth is primarily affected by moose abundance, control of both moose and wolf populations would be the most effective wildlife management intervention for reversing caribou population declines. In many situations, therefore, changes to current moose, elk, and/or deer management regimes must accompany predator control programs. In addition, the abundance of moose, elk, and/or deer is currently unduly high on some caribou ranges as a result of human or wildfire created habitat conditions (creation of young forest stands). Special management of moose, elk, and/or deer is also required in these situations. It is noted that moose, elk, and deer are already intensively managed for consumptive human use throughout non-federal lands in Alberta.

Revised management strategies for moose, elk, and/or deer on (or near) caribou range must take account of the following conditions:

- Management would strive to control increases in ungulate population productivity, population size, and/or distribution, which may occur as a result of predator management or human/wildfire-caused habitat change.
- Ungulate populations would not be eliminated, but increases in population size and productivity would be managed.
- Ungulate population management on (or near) caribou range would be conducted to achieve specific, stated, and measurable results.

It should be noted that predators are affected by the abundance and distribution of other prey species in addition to ungulates. Beaver in particular is a critical summer food source for wolves in many parts of the boreal forest. This relationship should be considered when plans to manage ungulate populations are being considered.

7.7 Management of Human-Caused Direct Mortality

7.7.1 First Nations Harvest

Licensed hunting of woodland caribou was discontinued in Alberta in 1981, however, harvest of caribou by First Nations peoples has continued. In some cases caribou harvest by First Nations may have significant consequences for the population trend of individual caribou herds. Recovery efforts need to focus on these areas. Population modelling has demonstrated that relatively small reductions in the annual mortality of adult female caribou have the most significant effect on caribou population trends (Fancy et al. 1994, Smith 2004).

Discussions with First Nations communities are required. The objective would be to initiate and maintain a dialogue on caribou conservation issues, and strive for voluntary cessation of caribou hunting by First Nations in Alberta. Discussions need to focus on the value of caribou and the advantages that caribou conservation could provide to First Nations communities. The recovery team believes it would be important to provide resources so that First Nations people could be involved in delivering these discussions to the communities. All discussions must strive to involve First Nations in caribou conservation activities in a "team work" atmosphere. This should include gathering information on traditional knowledge, as well as current information such as data on caribou sightings.

7.7.2 Poaching

Poaching is believed to be a source of caribou mortality in some areas. Fish and Wildlife officers with Alberta Fish and Wildlife Division vigorously investigate all reported poaching occurrences related to caribou. By its nature, however, enforcement actions can never be complete in all situations; many incidents of poaching go unreported. Poaching activity in Alberta very frequently occurs in association with access routes that allow for highway vehicle traffic (Alberta Fish and Wildlife Division unpubl. data). This is one of the reasons that current industrial operating guidelines focus on attempts to manage the proliferation of access development and recommend that temporary and/or non-standard access routes be employed. Range planning teams must continue to focus on these fundamental tools to reduce the poaching of woodland

caribou. As a second, but much less effective method, guidelines outline options, such as access control gates, for control of public highway vehicle travel on industrial roadways.

Range teams need to focus attention on issues related to the development and maintenance of public access within caribou ranges. Public educational materials and programs are also required to explain and highlight the importance of measures designed to conserve caribou, Alberta's commitment to caribou conservation, and the consequences of illegally killing caribou.

7.7.3 Vehicle Collisions

Use of temporary and/or non-standard access routes and control of public travel also somewhat reduces the risk of vehicle collisions with caribou. However, caribou/vehicle collisions remain a significant concern in several areas, most notably along Highway 40 within the A La Peche caribou range and on Highway 93 within the South Jasper caribou range. Range plans must consider these and other problem areas, and recommend potential solutions.

7.8 Monitoring, Plan Evaluation and Amendment

The Alberta Woodland Caribou Recovery Team will meet at least annually to review and evaluate progress in implementing recovery actions, and to review progress towards the preparation and implementation of range plans. The recovery team will report annually to the Director of Wildlife Management on the progress of recovery implementation and will provide ongoing comments to the Alberta Endangered Species Conservation Committee, as well as to other senior provincial and federal government personnel. It is anticipated that, in an ongoing manner, provincial and federal governments will similarly review and evaluate recovery actions and the progress of plan implementation. An adaptive management approach will be employed and recovery actions will be adjusted annually if necessary. The entire recovery plan will be re-evaluated at a three-year interval. Recovery of woodland caribou herds will be evaluated using data on adult survival and calf recruitment, which will provide information on population trends. Herd distribution information will also be considered, where these data are available.

8.0 TIME LINE FOR RECOVERY

The following time line divides the next ten years into three stages that will progressively improve conditions for caribou. Annual reports of all activities and results will be required from each range team, and a summary report prepared at the end of each of the three stages. Similarly in year ten an overall summary report will be required. All annual and summary reports will be evaluated with respect to achievement of the overall provincial caribou recovery plan goals and objectives. Any necessary additions or changes to recovery actions will be determined and implemented.

Within the next ten years the overall targets are to achieve a stable rating for the majority of caribou herds in Alberta, and ensure that sufficient quality habitat has been provided, or is developing, for individual caribou herds.

Stage 1 (2004/05-2006/07)

During this stage, the following items will be priorities:

- Establish caribou range teams and assess caribou habitat constraints and concerns (resulting from both human and natural causes) for individual caribou ranges. Implement recommended range-specific management actions, including habitat restoration and management of industrial activity, public access, and wildfire, as required.
- For caribou herds in immediate risk of extirpation, implement a moratorium on further mineral and timber resource allocation (sales) until a range plan is completed, evaluated, and implemented. It is anticipated that this process will take a maximum of one year from the date of range team formation.
- For caribou herds in immediate risk of extirpation and herds in decline, determine management actions and an implementation schedule in relation to management of predators and other prey species. Implement recommended range-specific management actions. This provision applies to caribou herds on provincial and federal lands.
- Ensure that land use guidelines (designed for caribou conservation) are effective and are applied to all provincial caribou ranges.
- Develop and implement measures to reduce human-caused mortality of caribou.
- Categorize herds currently listed as unknown status.
- Create and implement a provincial caribou monitoring strategy.
- Prepare summary reports (annual and year three) of all range plans and other provincial caribou recovery activities, and evaluate progress towards achieving woodland caribou recovery.

Stage 2 (2007/8-2009/10)

During this stage, the emphasis will focus on:

- Careful habitat management and accelerating the rate of habitat recovery on target caribou ranges.
- Monitoring of caribou population trend.
- Continuing to adjust management actions where necessary.
- Preparation of summary reports (annual and year six) of all range plans and other provincial caribou recovery activities, and evaluation of progress towards achieving woodland caribou recovery.

Stage 3 (2010/11-2013/14)

During this stage, the emphasis will be on improving practices that support caribou recovery.

9.0 RECOVERY ACTIONS AND SCHEDULE (STAGE 1)

For this woodland caribou recovery plan to be effective, the following actions must be implemented in the next three years.

9.1 Caribou Range Plans

1. Provincial and/or federal governments, together with representatives of industry and other stakeholders, should establish caribou range teams (by geographic areas as outlined in Figure 2), and initiate range planning, based on the following schedule:

    - East Side Athabasca River – Fall 2002 (already initiated by Boreal Caribou Committee)
    - Chinchaga – Fall 2002 (already initiated by Boreal Caribou Committee)
    - West Central – Fall 2004
    - West Side Athabasca River – Fall 2004
    - Red Earth – Fall 2004
    - Richardson – Fall 2005
    - Bistcho/Caribou Mountains – Fall 2005

2. Caribou range teams must develop and recommend interim management actions within six months of range team formation, and completed range plans within one year of team formation (see Appendix 4). Government should review and begin to implement each team's interim recommended management changes within six months of range team formation. Implementation of completed range plans should begin within one year of range team formation.

3. Provincial and/or Federal governments should consult with caribou and land managers in adjacent jurisdictions (British Columbia, Northwest Territories, Saskatchewan) to ensure that range plan recommendations and results are communicated and that management actions are aligned for cross-boundary herds. Current ongoing work to continue.

9.2 Habitat Planning Targets

1. Provincial government should lead an effort to complete development of a habitat-planning target for mountain caribou winter ranges by December 2004.

2. The Boreal Caribou Committee should update and periodically evaluate the boreal caribou habitat target equation as new caribou population trend, habitat alteration, and other data become available.

9.3 Industrial Operating and Access Management Guidelines

1. Provincial and/or federal governments, in consultation with industry and the multi-stakeholder caribou committees should prepare a summary of the operating guidelines currently being applied within Alberta's caribou ranges. Complete by December 2004.

2. Provincial and/or federal governments, in consultation with industry and the multi-stakeholder caribou committees should ensure that no areas of the province (e.g., Cold Lake caribou range) are lacking application of operating guidelines developed with respect to caribou conservation. Institute guidelines in all areas by September 2004.

3. Provincial and/or federal governments, in consultation with industry and the multi-stakeholder caribou committees should review current operating guidelines, with respect to value for caribou conservation, and develop/implement any recommended changes. Complete by Spring 2005.

4. Guidelines and their associated best practises must align with range plans outlined above.

5. The provincial Access Management Program (see Appendix 5) will need to take account of information and recommendations from caribou range plans to ensure alignment with caribou conservation needs and to achieve effective access management results.

9.4 Management of Other Wildlife Species

1. Alberta Fish and Wildlife Division and Parks Canada should determine options and a schedule for implementing control of predators and (possibly) other prey species on caribou ranges where herds are in immediate risk of extirpation. The report should include program description and justification, including implementation schedule and detailed program goals/objectives. Report to be completed by October 2004. Begin implementation of any recommendations during winter 2004/05.

2. Alberta Fish and Wildlife Division and Parks Canada should prepare a long-term action plan regarding the need for, and options for delivery of, predator and other prey species management for caribou ranges where herds are in decline. The plan should consider both, (1) measures to control predator mobility and hunting efficiency and (2) measures to control predator population size and distribution. Report to be completed by December 2004. Begin implementation as recommended by action plan schedule.

9.5 Management of Human-Caused Direct Mortality

1. Provincial government should develop and establish a process of effective dialogue with First Nations communities aimed at achieving a voluntary cessation of caribou hunting. Initiate process in key First Nations communities in 2004/2005. Broaden the process to include additional communities in 2005/2006 and 2006/2007.

2. Provincial government together with First Nations communities should develop and initiate an extension and consultation process with First Nations peoples not residing within First Nations communities, towards achievement of a voluntary cessation of caribou hunting.

3. Provincial government together with industry should develop and distribute provincial educational materials outlining the status of caribou in Alberta, the importance of caribou

conservation, and the consequences of illegally killing caribou. A first task would be to determine the target audience for receipt of the educational materials. Initiate process in 2004/2005.

4. Alberta Fish and Wildlife Division should prepare a strategic review of enforcement priorities, impediments, and opportunities regarding the reduction of woodland caribou poaching in Alberta. Complete review and begin to implement any recommended changes in 2004/2005.

9.6 Estimate Woodland Caribou Population Trends

1. Alberta Fish and Wildlife Division should complete an initial assessment of caribou population trend for herds of "unknown status" by fall 2004. Report to be based on currently available information, professional judgement and local knowledge.

2. Alberta Fish and Wildlife Division, Parks Canada, and the Department of National Defence, in collaboration with industry should prepare a detailed overall strategy and plan (including a schedule) for the long term monitoring (trend and distribution) of woodland caribou herds in Alberta. It is anticipated that substantial discussions must occur with the multi-stakeholder caribou committee in completing this task. Plan to be completed by December 2004 with implementation beginning during the winter of 2004 - 2005.

9.7 Determine Feasibility of Restoring Caribou to Former Range

1. Alberta Fish and Wildlife Division should prepare a report, which reviews and make recommendations on the feasibility of restoring caribou to former range. Complete report by March 2005.

9.8 Evaluation of Recovery Implementation

1. The Alberta Woodland Caribou Recovery Team Leader will annually call upon those conducting caribou recovery actions to prepare summary reports of activities and accomplishments. Each range team must prepare an annual report. Summary reports will be provided to senior provincial and federal government personnel, and will be provided to the Alberta Woodland Caribou Recovery Team. The recovery team will evaluate all reports with respect to progress towards achieving woodland caribou recovery, and will communicate the results of these evaluations to senior government personnel and to the Alberta Endangered Species Conservation Committee. Similarly in year three, the team leader will organize the preparation and review of an overall provincial summary report for Stage 1 of recovery plan implementation.

2. The Alberta Woodland Caribou Recovery Team Leader will call a meeting of the recovery team at least annually to review and comment upon plans, reports, and/or summaries of recovery plan activities and accomplishments. The team leader will determine if more frequent team meetings are required.

10.0 THREE YEAR BUDGET AND GOVERNMENT HUMAN RESOURCE REQUIREMENTS FOR RECOVERY PLAN IMPLEMENTATION

10.1 Three Year Budget [24]

Activity	Cost Estimate ($000's)			
	2004-05	2005-06	2006-07	Total
Landscape Planning				
Caribou Range Plans	125	160	60	345
Consultation with Adjacent Jurisdictions	5	5	5	15
Habitat Planning Targets	25	5	5	35
Industrial Operating and Access Management Guidelines	20	8	--	28
Management of Other Wildlife Species				
Predator and Other Prey Species Management Planning Report Preparation	5	5	--	10
Predator and Other Prey Species Management Predator/ Other Prey Surveys	130	130	130	390
Predator and Other Prey Species Management Implementation [25]	350	350	350	1,050
Management of Human-Caused Direct Mortality				
First Nations Harvest	80	80	80	240
Poaching	25	15	15	55
Herd Monitoring				
Strategy and Plan Development	--	--	--	--
Monitoring Trend and Distribution [26]	247	206	206	659
Feasibility of Restoring Caribou to Former Range				
Report Preparation	--	--	--	--
Evaluation of Recovery Implementation				
Summary Report Preparation	5	5	5	15
Recovery Team Function	5	5	5	15
Total	**1,022**	**974**	**861**	**2,857**

[24] Includes both provincial and federal lands. This budget reflects costs associated with recommended recovery actions. It should be noted, however, that numerous partners have funded, and may continue to provide funding and in-kind support to initiatives that contribute to woodland caribou recovery in Alberta.

[25] Subject to recommendations from predator and other prey species action planning reports. These budget figures provide estimated costs of implementing predator and other prey species management actions for all caribou herds in immediate risk of extirpation and all herds in decline.

[26] Subject to recommendations from provincial woodland caribou monitoring strategy.

10.2 Three Year Government Human Resource Requirements [27]

Activity	Estimated Number of Additional Full Time Equivalent Positions (required per fiscal year)			
	Wildlife Branch (F&W Div.)	Enforcement Field Services (F&W Div.)	Public Lands and Forests Div. and other SRD	Parks Canada
Landscape Planning				
Caribou Range Plans / Habitat Planning Targets / Industrial Operating and Access Management Guidelines / Communications	4	--	3	1
Management of Other Wildlife Species				
Predator and Other Prey Species Management Predator/Other Prey Surveys	2	--	--	0.5
Predator and Other Prey Species Management Implementation [28]	2	7	--	0.5
Management of Human-Caused Direct Mortality				
First Nations Harvest	--	--	1	--
Poaching	--	1	--	--
Herd Monitoring				
Monitoring Trend and Distribution	--	--	--	1
Total	**8**	**8**	**4**	**3**

[27] Anticipated human resource requirements in addition to current human resource allocation to caribou management activities. These recommended requirements are also in addition to those listed in Section 10.1

[28] Subject to recommendations from predator and other prey species action planning reports.

11.0 REFERENCES

Note: Recent technical citations have been referenced in this document. The reader is directed to Dzus 2001 and COSEWIC 2002 for a detailed list of pertinent references related to caribou biology, life history and limiting factors.

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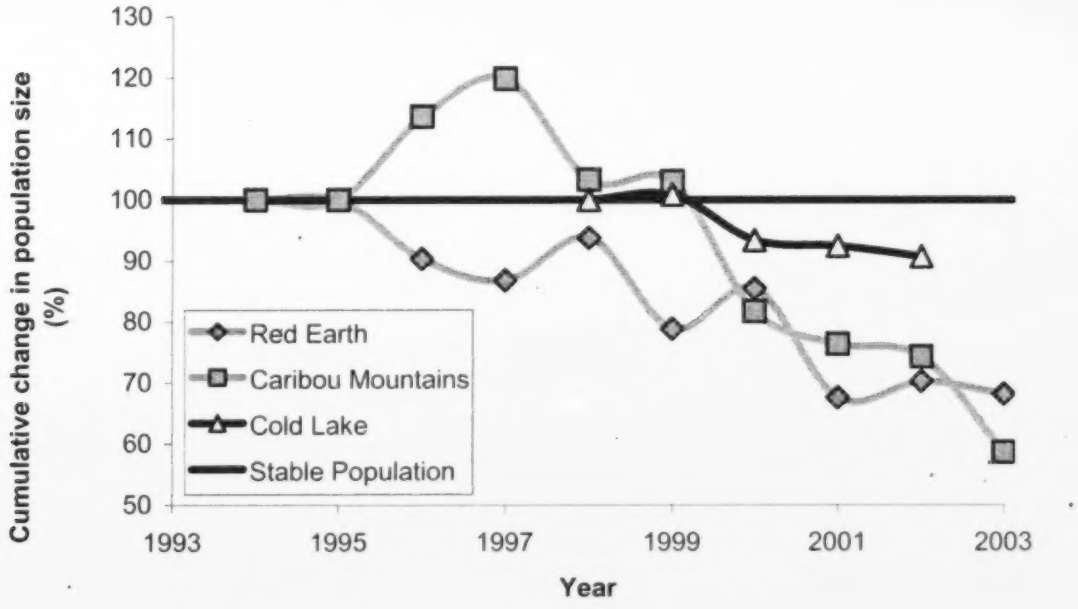
APPENDIX 1: Estimated Cumulative Change in Population Size (%) for Monitored Woodland Caribou Herds over the Period of Active Population Trend Monitoring

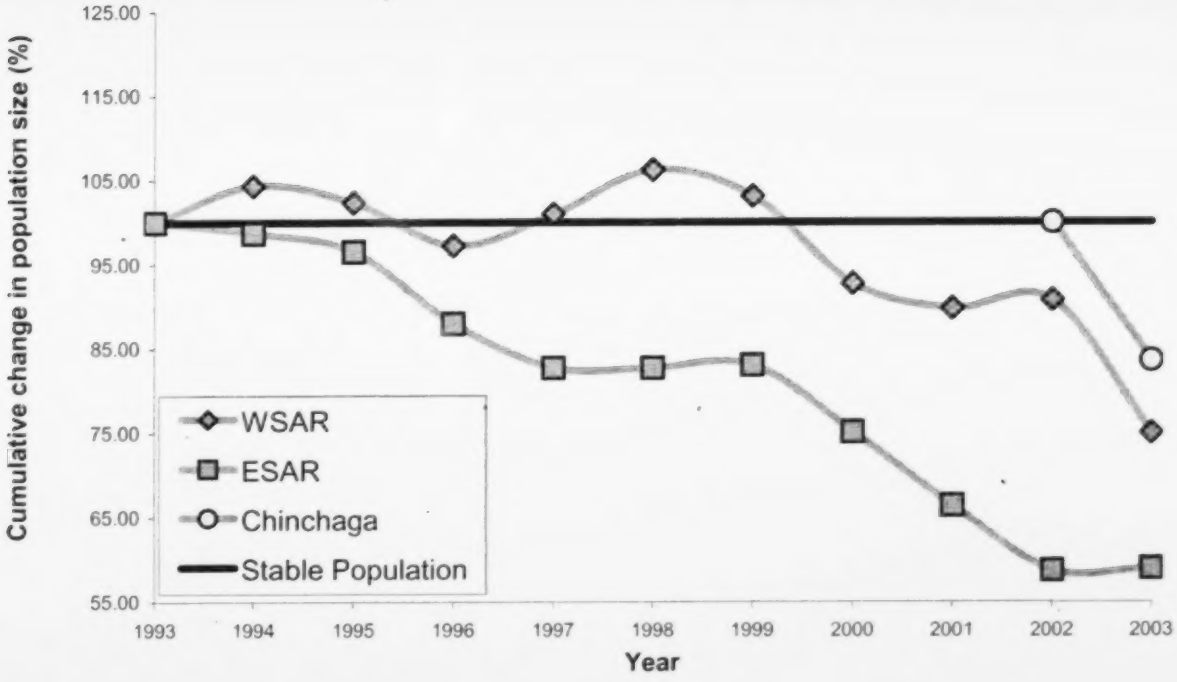
a) Red Earth, Caribou Mountains, and Cold Lake[29] Caribou Herds [30]



[29] Includes caribou data from both Alberta and Saskatchewan portions of the Cold Lake Air Weapons Range.

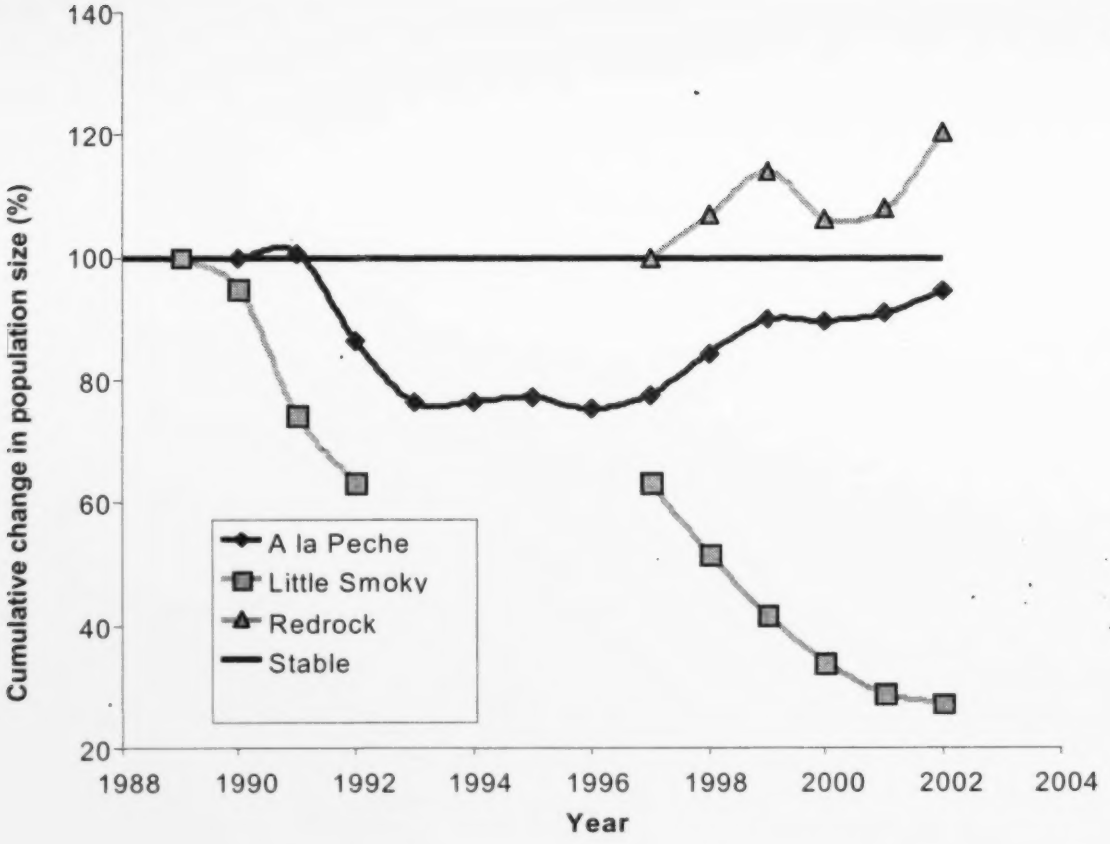
[30] Population projections were based on survival of radio collared adult female caribou between years 1993–2003. Survival of caribou was monitored by aerial location of collared caribou on a monthly or semi-weekly basis for years 1995-2003 (Red Earth and Caribou Mountains), and 1998-2003 (Cold Lake). Pollock et al.'s (1989) staggered-entry modification of the Kaplan-Meier survivorship model was used to estimate annual adult survival for each range and each year (May–Apr). Survival means were based on the geometric average across all years. Calf production was assessed by determining pregnancy rates based upon analyses of serum collected during captures in Jan–Feb of each year of study, and by counting the number of cows observed with calves at their side during the calving season (Apr–Jun). Calf recruitment was determined from aerial surveys in March of the following year by counting the number of calves and adults in each range associated with collared caribou; recruitment was expressed as a ratio of calves per 100 adult females, and recruitment means were based on the geometric average across all years. Suspicious collar disappearances are not included in adult survival estimates, and calf survival to 10 months is used rather than survival to one year, therefore actual population declines may be greater and population increases may be less than illustrated.

b) West Side Athabasca River, East Side Athabasca River, and Chinchaga Caribou Herds[31]



[31] Population projections were based on survival of radio collared adult female caribou between years 1993–2003. Survival of caribou was monitored by aerial location of collared caribou on a monthly or semi-weekly basis for years 1993-2003 (East and West Side Athabasca) and 2003 (Chinchaga). Pollock et al.'s (1989) staggered-entry modification of the Kaplan-Meier survivorship model was used to estimate annual adult survival for each range and each year (May–Apr). Survival means were based on the geometric average across all years. Calf production was assessed by determining pregnancy rates based upon analyses of serum collected during captures in Jan–Feb of each year of study, and by counting the number of cows observed with calves at their side during the calving season (Apr–Jun). Calf recruitment was determined from aerial surveys in March of the following year by counting the number of calves and adults in each range associated with collared caribou; recruitment was expressed as a ratio of calves per 100 adult females, and recruitment means were based on the geometric average across all years. Calf recruitment data was unavailable for ESAR in 1998; hence population trends are depicted as unchanged between 1997and 1998 in ESAR. Suspicious collar disappearances are not included in adult survival estimates, and calf survival to 10 months is used rather than survival to one year, therefore actual population declines may be greater and population increases may be less than illustrated.

c) Redrock / Prairie Creek, Little Smoky, and A La Peche Caribou Herds[32]



[32] Population projections were based on survival data of radio collared adult female caribou (pooled for each herd for the monitoring period) and recruitment of calves (determined from population composition surveys) between 1990 and 2000. The adult survival rate of the ALP herd was reduced by 7% to 0.81 in 1991 and 1992 because of heavy mortality due to vehicle collisions observed on Hwy 40 (15 and 17 animals killed, respectively, from an estimated population size of 150-200 animals). For 2001 and 2002, year specific values for adult female survival were used. Where calf recruitment was based on fall surveys (ALP and RPC herds) the value was reduced by 10% to the following spring to account for higher winter mortality of calves. The Little Smoky herd was not monitored for herd trend between 1993 and 1996.

APPENDIX 2: Qualitative Assessment of Current Industrial/Development Infrastructure and Recent Forest Fires in Caribou Range

North Banff

- Primary highway bisects historic travel corridor linkage to the South Jasper range. Range subject to various recreational uses, ranging from low to high intensity depending on drainage basin. Historic winter range (outside of Banff National Park) dramatically altered by many human activities.

Slave Lake

- Very high levels of oil and gas development, including geophysical exploration lines and roadways. Some timber harvesting. Significant habitat loss to recent forest fires (estimated to be at least 41% between 1998-2001).

Little Smoky

- Exceedingly high levels of geophysical exploration lines. Moderate roadway development, several new major corridor routes. Some areas of intensive oil/gas well site development, low to moderate levels of oil/gas well site development throughout the remainder of the range. High to very high levels of timber harvest around the periphery of the range (both within and outside of the range), harvest within the central portions of the range increasing.

South Jasper

- A primary highway bisects range. Several major access roads provide year-round recreational access to caribou breeding and winter habitat areas. Historic winter range (outside Jasper Park) dramatically altered by many human activities.

Caribou Mountains

- Substantial geophysical exploration lines. Little oil and gas development. Minimal roadway development. Timber harvesting along the southern edge of the caribou range. Severely impacted by fire over the last 20 years.

Red Earth

- Moderate to high levels of oil and gas development. Oil areas intensively developed. Moderate to high levels of geophysical exploration lines. High levels of timber harvesting on western edge.

Cold Lake

- Moderate levels of oil and gas development. Limited to no timber and peat harvesting.

East Side Athabasca River

- Moderate to high levels of intensive in-situ oil sands development. Moderate levels of conventional oil and gas exploration and development, and high levels of geophysical exploration, which is increasing. Extensive road networks. High levels of pipeline and trans-regional powerline construction. Peat harvesting which is limited in distribution but locally intensive. Limited timber harvesting. Agricultural development encroaching in some areas.

Chinchaga

- Very high levels of geophysical exploration lines, and moderate levels of roadway development. High levels of gas exploration, development and production. Limited oil development. Some timber harvesting.

Bistcho

- Moderate geophysical exploration lines. Moderate but expanding oil and gas development and roadway development. Moderate levels of timber harvesting.

Hotchkiss

- Moderate to high levels of geophysical exploration lines and gas development and production. Moderate levels of coniferous timber harvesting and increasing levels of deciduous harvesting.

Deadwood

- Expansion of agricultural lands in the south and east portions. Moderate levels of oil and gas exploration and production. High levels of geophysical exploration lines. Moderate levels of timber harvesting.

Richardson

- Industrial activity variable; very little in the Firebag area, moderate forestry and oil/gas in the Steepbank area, and high in the Audet area. Heavy oil plant proposed for the Audet area. Muskeg Mountain portion of the Steepbank area slated for increased oil and gas development, with the potential for heavy oil development as well.

Narraway

- Low to moderate levels of geophysical exploration lines west of the Narraway River. Very little oil and gas well site development west of the Narraway River, but activity now accelerating with recent construction of first permanent bridge over the Narraway River. Timber harvesting has recently begun west of the Narraway River. Northern and northeastern portions of the range (east of Narraway river) contain moderate to high levels of timber harvesting and oil and gas development, including geophysical exploration lines. Agricultural expansion has affected the northern portion of the range.

Redrock/Prairie Creek

- Moderate to high levels of oil and gas development. Moderate to high levels of geophysical exploration lines. High levels of roadway development, although some portions of the range still remote. Very high levels of timber harvest in portions of the range (second entry completed), dispersed harvesting now occurring throughout range.

West Side Athabasca River

- Extensive gas development, with relatively small areas of intensive in situ oil development. Limited timber harvesting on the western edge of the range.

A La Peche

- Moderate levels of oil and gas development in the traditional caribou winter range. Considerable amounts of new roadway construction. Very high levels of timber harvesting (in some cases second entry completed) in portions of the traditional winter range. Primary highway bisects the range.

APPENDIX 3: Range Teams - Terms of Reference

Purpose	This Range Team was formed at the request of the Director of Wildlife Management (and equivalent federal representative for areas involving federal lands) to develop and recommend a plan including specific recommended actions that will facilitate the recovery of woodland caribou and caribou habitat within the designated caribou range area.
Duties	The Range Team will develop and recommend a range specific plan for caribou recovery within the identified caribou range area. It will support a collaborative process through meetings, correspondence and stakeholder discussions. The Range Team will prepare an annual summary report of its activities and accomplishments, to be provided to senior personnel in provincial and federal governments, and to the Alberta Woodland Caribou Recovery Team.
Limitations and Requirements	Range Teams will receive direction from, and be bound to, the goals, objectives, and strategies and outlined within the Alberta Woodland Caribou Recovery Plan.
Membership Composition	The Range Team will represent a cross-section of stakeholder groups that have an active interest in land-use planning and management in the specified caribou range planning area. Range Team membership will approximate the organizations and sectors invited to participate on the Alberta Woodland Caribou Recovery Team. The Range Team is intended to be primarily a technical group, focussing on technical issues concerning caribou habitat and population management, and local land use practices.
Role of Range Team Members	Range Team members are responsible for keeping their constituents informed as the action plan is developed and implemented. All Range Team members are expected to work in a spirit of co-operation to support the implementation of the Alberta Woodland Caribou Recovery Plan.
Range Team Leader	The Director of Wildlife Management (and equivalent federal representative for areas involving federal lands) will designate a Range Team Leader. The Range Team Leader is responsible for calling and chairing meetings, delegating tasks, ensuring co-ordination and communication with members, government and other stakeholders. The Range Team Leader is responsible for maintaining a constant dialogue with the Alberta Woodland Caribou Recovery Team Leader (and thereby the Recovery Team) as well as maintaining a dialogue with the multi-stakeholder caribou committee.
Respecting Existing Responsibilities	The management of fish and wildlife, forest, land, and subsurface resources in Alberta is the responsibility of the provincial government. The federal government manages these sectors on some federally controlled lands.
Range Plan Review and Approval	Caribou range plans will be submitted to the Director of Wildlife Management (Alberta Sustainable Resource Development) and to senior federal government personnel (where federal lands are involved). Range plans will be submitted as advice to the government, and for review, approval, and implementation. Plans

will be subject to departmental and interdepartmental review within government.

Decision Process The Range Team should use a consensus process to achieve agreement on the proposed actions. However, the Range Team Leader may call a vote if the consensus process becomes stalled and the need for action is urgent. In the case of a vote, there must be a minimum of 75% of team members in support to carry the decision. The concerns of any members not in support of the decision must be recorded and significant effort must be made to address these concerns. The calling of a vote should be a rare event, and should be avoided wherever consensus solutions remain feasible.

APPENDIX 4: Range Teams - Activities and Responsibilities

Range teams will receive direction from, and be bound to, the goals, objectives, and strategies listed within the Alberta Woodland Caribou Recovery Plan. In developing range plan recommendations, range teams are expected to review and consider all factors limiting caribou populations and habitats. A primary task for range teams is to determine and recommend plans and measures that will manage cumulative effects and allow caribou habitat targets to be met. Range plans may result in revised project level industrial operating guidelines for individual caribou ranges. The following are anticipated range team activities and responsibilities with respect to managing cumulative effects:

- Review all necessary information (including current and past caribou distribution, and current/potential habitat) and establish/finalize the range planning area. Similarly, review all caribou range boundaries. Confirm range boundaries or recommend necessary adjustments. Provide all map revisions to government managers as recommended improvements to provincial wildlife/land use maps.

- Collect and summarize all data on caribou habitat types within the planning area.

- Collect and summarize all data on fire history, industrial footprint and other land uses within the planning area ("disturbance footprint").

- Within six months of range team formation, develop a qualitative assessment of range specific limiting factors (both proximate and ultimate), and develop interim recommendations on range-specific management changes. Describe all recommendations to government managers and to the Alberta Woodland Caribou Recovery Team.

- Set caribou population growth targets, taking account of direction provided within the provincial recovery plan. Set range specific timelines to meet population targets.

- Review Habitat Planning Target(s) and compare to current habitat supply. Document current shortfall or surplus of caribou habitat.
  - Spatially depict and summarize constituent elements of disturbance footprint.

- Develop and, using a spatial analysis (where appropriate), quantitatively assess range specific strategic options for changes to land-use management.
  - Include analysis of industrial practices and options for applying reclamation/habitat restoration practices.
  - Include analysis of wild fire prevention and management options.
  - Include analysis of any concerns related to public access management.

- Assess efficacy of management options and finalize recommendations. Process to include:

- Project future caribou habitat and range condition with alternate land management options.
- Assess options individually and in combination.
- Assess areas of greatest need (i.e., value to caribou) within each range.
- Assess cost effectiveness and practicality.

- Within one year of range team formation, summarize and recommend range specific actions that would be most effective and have the greatest chance of successfully achieving caribou habitat targets. Provide a clear statement on recommended management actions with timelines.
  - Outline expected outcomes and how to monitor results.
  - Outline necessary data management and ongoing database requirements.

- Contribute to implementation of identified strategies
  - Cooperative work.
  - Government Systems.

- Report annually on the progress of range plan development and implementation.

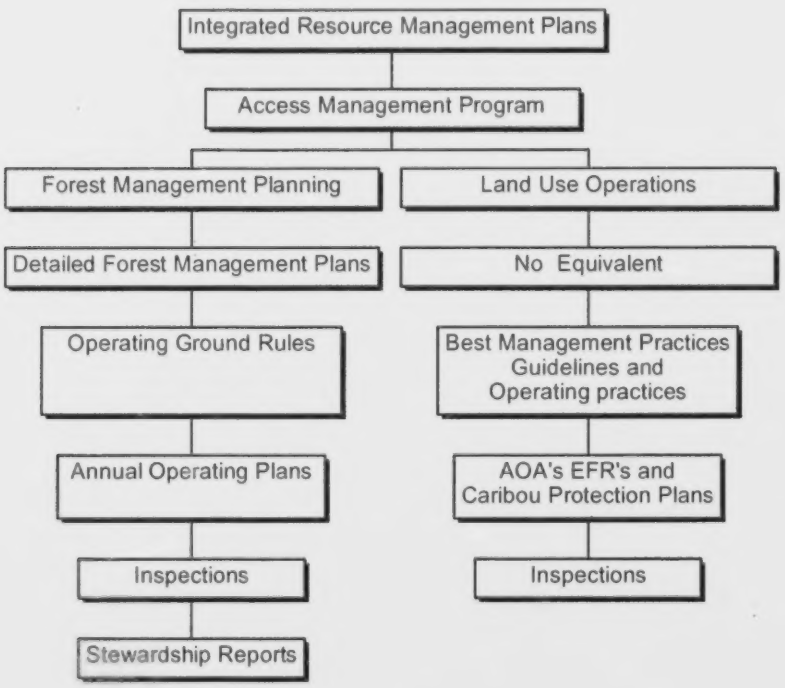
APPENDIX 5: Sustainable Resource Development Land Management Planning Systems

Introduction

Alberta Sustainable Resource Development (SRD) accomplishes land management on forested lands within Alberta's "green area" through a series of nested plans (see flowchart). It is important that caribou range and recovery plans provide input and advice into these nested plans early in the process, and it is important that the input and advice be appropriate for each planning level.

It is anticipated that any planning process that encompasses a caribou range will include input from the appropriate caribou range plan and/or the provincial woodland caribou recovery plan. Each planning level is discussed with respect to integration of caribou range/recovery plan information.

Land Management Planning Flowchart



Integrated Resource Management Plans

Integrated resource management plans (IRMPs) are the highest level of planning. IRMPs set very broad goals and objectives for a landscape. IRMPs only cover a limited area of the province at this time. Caribou range/recovery plan input to IRMPs should set the stage for subsequent lower levels of planning and flag the importance of caribou management in the planning area. IRMPs are coordinated through Alberta Environment.

Access Management Program

SRD is initiating a new Access Management Program to:

- Ensure sustainability of various values and resources on a broad landscape level.
- Identify and provide certainty with respect to appropriate levels of access.
- Allow for a prosperous economy.
- Encourage collaboration in data management and research.

There are three legs to the program, public and recreation access, industrial access, and reclamation. The SRD Access Management Planning program team will be finalized in March 2004 with a cross-ministry team established after that.

Caribou range/recovery plan recommendations, such as those regarding habitat targets, strategies to minimize industrial footprint, and advice on reclamation of existing footprint, will be key to this planning level. Strategies developed at this level will be incorporated at all other scales of planning.

Forest Management Planning

Detailed Forest Management Plans

Detailed Forest Management Plans (DFMPs) create a list of objectives and an implementation strategy that forest companies must follow. A key output is a Spatial Harvest Sequence (SHS). The SHS is a mapped product showing the stands that companies will harvest over a ten-year period. It is important to note there is only limited opportunity to amend the SHS after the DFMP is approved, so caribou range/recovery plan input is critical. Several timber companies have some provisions with respect to caribou habitat supply analyses within current DFMPs.

Caribou range/recovery plans should provide key advice on topics such as landscape planning targets and caribou habitat management.

Operating Ground Rules

As a component of DFMPs, companies and SRD are obligated to negotiate a set of Operating Ground Rules (OGRs). These OGRs outline the operational planning process as well as an agreement on how to manage many operational resource concerns, such as issues related to caribou. Although there is opportunity to provide advice, many caribou management concerns are more effectively (or can only be) resolved at the SHS stage. The OGRs may provide operating conditions related to caribou management.

Annual Operating Plans

By regulation, companies are required to follow an Annual Operating Plan (AOP), which is prepared by the company and approved by SRD. The AOP must conform to the DFMP. At this stage, the opportunity for effective caribou range/recovery plan input may be limited; it is important to ensure that, as many recommendations as possible are included at higher levels of planning.

Inspections

Many companies are required to submit self-inspection forms, which document that they are following the AOP. As well, Public Lands and Forests Division (PLFD) staff complete inspections on some operations. Caribou range/recovery plans may provide background information to assist in the inspection process.

Stewardship Reporting

Forest Management Agreements (FMAs) provide annual reports and five-year stewardship reports. This provides an opportunity for the company and SRD to review what was accomplished as compared to what was outlined in the DFMP. This provides one opportunity to evaluate the objectives in the DFMP and consider changes.

Land Use Operations

Note: There is no equivalent to Detailed Forest Management Plans within Land Use Operations

Best Management Practices and Industrial Operating Guidelines

Caribou range/recovery plans can recommend Best Management Practices and Industrial Operating Guidelines for review by SRD. If accepted, the recommendations will become policy and/or conditions of dispositions.

Area Operating Agreements, Environmental Field Reports, and Caribou Protection Plans

Area Operating Agreements (AOA's) allow companies to obtain approval of more that one disposition at a time. As more companies move to AOA's there will be a stronger linkage to the Access Management Program. Environmental Field Reports and Caribou Protection Plans are prepared to mitigate specific environmental concerns in an application. Caribou range/recovery plans can provide various inputs to these processes, including best management practices, landscape planning targets, etc.

Inspections

Forest Officers inspect dispositions to ensure compliance. Caribou range/recovery plans may provide background information to assist in the inspection process.

List of Titles in the Alberta Species at Risk Recovery Plan Series
(as of July 2005)

No. 1 Maintenance and Recovery Plan for Western Blue Flag (*Iris missouriensis*) in Canada. (2002)

No. 2 Alberta Piping Plover Recovery Plan 2002-2004. (2002)

No. 3 Alberta Peregrine Falcon Recovery Plan 2004-2010. (2005)